

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims**

**Claim 1 (previously canceled)**

**Claim 2 (previously canceled)**

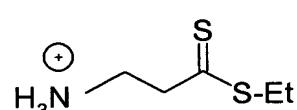
**Claim 3 (previously canceled)**

**Claim 4 (previously canceled)**

**Claim 5 (previously canceled)**

**Claim 6 (previously amended)** A method according to claim 35, wherein said coupling is a classical peptide coupling using a derivative of 2-(2-nitro-imidazol-1-yl) acetic acid in which the OH group of the carboxyl function has been replaced by a good leaving group.

**Claim 7 (currently amended)** A method for the synthesis of a compound according to claim 31 ~~or the corresponding non-labeled form thereof~~, comprising the steps of:  
a) adding a THF solution of ~~2~~ of Figure 7 to a suspension of PYBOP in THF followed by Et<sub>3</sub>N,  
b) adding an amine ~~4~~ of Figure 7 formula 1



and Et<sub>3</sub>N to the solution obtained in step (a),

- c) adding a catalytic amount to the solution obtained in step (b) of pTsOH and refluxing the solution,
- d) cooling the solution obtained after step (c) at ambient temperature and adding a sodium bicarbonate solution,
- e) extracting the product obtained after step (d) with ethyl acetate and drying and concentrating the product with ethyl acetate,
- f) purifying the residue obtained after step (e) by column chromatography on silica gel,
- g) removing traces of water by washing the product of step (f) with trifluoroacetic anhydride,
- h) reacting ~~said a~~ persulphurated derivative obtained from step (g) with a suitable labeled or non labeled perfluorinating agent and a suitable oxidant resulting in a compound having a high yield of fluor atom incorporation,
- i) deprotecting the nitrogen function, resulting in a perfluoroalkyl amine derivative, and
- j) coupling the perfluoroalkyl amine derivative obtained in step (i) with an activated form of 2-(2-nitro-imidazol-1-yl) acetic acid, resulting in the [18F]-labeled or non-labelled perfluorinated-nitroaromatic compound.

**Claim 8 (original)** A method according to claim 7 wherein hydrogen fluoride/pyridine complex (HF-Pyridine) is used as a perfluorinating agent and 1,3-dibromo-5,5-dimethylhydantoin (DBH) is used as an oxidant resulting in a compound having a high yield of fluor atom incorporation.

**Claim 9 (cancel)**

**Claim 10 (original)** A first intermediate compound having the general formula of an amino acid derivative which is N-protected by an imido group or a synthetically equivalent group and wherein the carboxyl function has been transformed into a dithioester function or a synthetically equivalent persulphurated moiety.

**Claim 11 (original)** A first intermediate compound according to claim 10, wherein the imido group is a phthalimido group.

**Claim 12 (previously amended)** A first intermediate compound according to claim 10, obtainable via steps a to g of the method of the invention.

**Claim 13 (previously amended)** A first intermediate compound according to claim 10, being ethyl 3-(N-phthalimido)-aminopropanedithioate, N-3,3,3-trifluoro-2-thioxopropyl) phthalimide, N- {[2-(trifluoromethyl)-1, 3-dithiolan-2-yl] methyl} phthalimide, methyl(or ethyl) 3-phthalimide-2,2-difluoropropanedithioate, N-[2,2-difluoro-3,3,3-tris(methylthio) propyl] phthalimide or N-[2,2-difluoro-3,3,3-tris(ethylthio)propyl] phthalimide.

**Claim 14 (original)** A second intermediate compound having the general formula of a [<sup>18</sup>F]-labelled perfluorinated amino acid derivative which is N-protected by an imido group or a synthetically equivalent group.

**Claim 15 (original)** A second intermediate compound according to claim 14, wherein the imido group is a phthalimido group.

**Claim 16 (previously amended)** A second intermediate compound according to claim 14, obtainable via steps a to h of the method of the invention.

**Claim 17 (previously amended)** A second intermediate compound according to claim 14, being N-(3,3,3-trifluoropropyl)phthalimide.

**Claim 18 (original)** A third intermediate compound having the general formula of a [<sup>18</sup>F]-labelled perfluoroalkyl amime.

**Claim 19 (original)** A third intermediate compound according to claim 18, being [<sup>18</sup>F]-labelled 3,3,3-trifluoropropyl amine.

**Claim 20 (previously amended)** A third intermediate [<sup>18</sup>F]-labeled compound obtainable via steps a to i of the method of the invention.

**Claim 21 (cancel)**

**Claim 22 (previously amended)** A [<sup>18</sup>F] labeled bioactive compound synthesized using as intermediates a first and third intermediate as claimed in claim 10, a second intermediate having the general formula of a [<sup>18</sup>F]-labeled perfluorinated amino acid derivative which is N-protected by an imido group or a synthetically equivalent group.

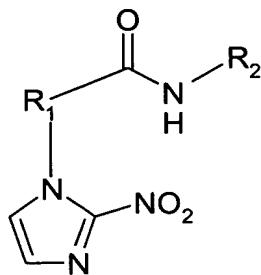
**Claim 23 (previously amended)** A [<sup>18</sup> F] labeled bioactive compound synthesized using as intermediates a first intermediate as claimed in claim 10.

**Claim 24 (previously amended)** Method of perfluorination using as an intermediate a compound as claimed in claim 10.

**Claim 25 (original)** The compound of claim 22 which is an [<sup>18</sup>F]-labeled perfluorinated nitroimidazole compound having an incorporation of [<sup>18</sup>F] atoms characterized by a specific radioactivity of the compound comprised between 1 and 30 Ci/mmol, preferably between 1 and 20 Ci/mmol, preferably 1 and 10 Ci/mmol.

**Claim 26 (currently amended)** A method for the detection of tissue hypoxia in a patient comprising:

- producing a [<sup>18</sup>F]-labeled perfluorinated-nitroaromatic compound having the formula:




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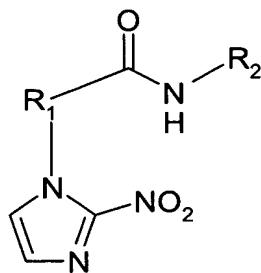
wherein R<sub>1</sub> is CH<sub>2</sub> and R<sub>2</sub> is an alkyl group having up to about 6 halogen atoms, wherein said alkyl group has the formula CH<sub>X</sub>CX<sub>2</sub> CY<sub>3</sub> where X is halogen or hydrogen and Y is fluorine by coupling 2-(2-nitro-imidazol-1-yl) acetic acid with a [<sup>18</sup>F]-labeled perfluoroalkyl amine derivative;

- introducing an [<sup>18</sup>F] labeled nitroimidazole compound of claim 31 into said patient,
- imaging tissue hypoxia in said patient, and
- quantifying tissue hypoxia in said patient.

**Claim 27 (original)** A method according to claim 26 wherein the detection technique used in said method is positron emission tomography.

**Claim 28 (currently amended)** A method for the detection of tissue hypoxia in a tissue comprising:

- producing a [<sup>18</sup>F]-labeled perfluorinated-nitroaromatic compound having the formula:




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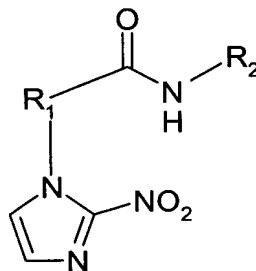
wherein R<sub>1</sub> is CH<sub>2</sub> and R<sub>2</sub> is an alkyl group having up to about 6 halogen atoms, wherein said alkyl group has the formula CH<sub>X</sub>CX<sub>2</sub> CY<sub>3</sub> where X is halogen or hydrogen and Y is

fluorine by coupling 2-(2-nitro-imidazol-1-yl) acetic acid with a [<sup>18</sup>F]-labeled perfluoroalkyl amine derivative;

- introducing ~~an~~ said [<sup>18</sup>F] labeled nitroimidazole compound of claim 31 into a patient,
- removing a tissue sample from said patient, and
- analysing the emission in said tissue sample by autoradiography.

**Claim 29 (currently amended)** A method for the detection of an [<sup>18</sup>F] labeled bioactive compound in a patient comprising:

- producing a [<sup>18</sup>F]-labeled perfluorinated-nitroaromatic compound having the formula:

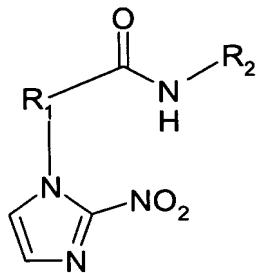


wherein R<sub>1</sub> is CH<sub>2</sub> and R<sub>2</sub> is an alkyl group having up to about 6 halogen atoms, wherein said alkyl group has the formula CH<sub>2</sub>XC<sub>2</sub>CY<sub>3</sub> where X is halogen or hydrogen and Y is fluorine by coupling 2-(2-nitro-imidazol-1-yl) acetic acid with a [<sup>18</sup>F]-labeled perfluoroalkyl amine derivative;

- introducing ~~an~~ said [<sup>18</sup>F] labeled bioactive compound according to claim 31 into said patient,
- imaging the presence of said [<sup>18</sup>F] labeled bioactive compound in said patient, and
- optionally, quantifying the presence of said [<sup>18</sup>F] labeled bioactive compound in said patient.

**Claim 30 (currently amended)** A method for the detection of [<sup>18</sup>F] labeled bioactive compound in a tissue comprising:

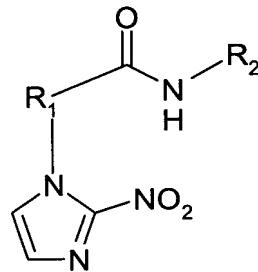
- producing a [<sup>18</sup>F]-labeled perfluorinated-nitroaromatic compound having the formula:



wherein  $R_1$  is  $CH_2$  and  $R_2$  is an alkyl group having up to about 6 halogen atoms, wherein said alkyl group has the formula  $CHXCX_2CY_3$  where  $X$  is halogen or hydrogen and  $Y$  is fluorine by coupling 2-(2-nitro-imidazol-1-yl) acetic acid with a  $[^{18}F]$ -labeled perfluoroalkyl amine derivative;

- introducing an  $[^{18}F]$  labeled bioactive compound of claim 31 into a patient,
- taking a tissue sample from said patient, and
- analysing the emission in said tissue sample by autoradiography.

**Claim 31 (currently amended)** A method for the synthesis of a  $[^{18}F]$ -labelled perfluorinated-nitroaromatic compound having the formula:



wherein  $R_1$  is  $CH_2$  and  $R_2$  is an alkyl group having up to about 6 halogen atoms, wherein said alkyl group has the formula  $CHXCX_2CY_3$  where  $X$  is halogen or hydrogen and  $Y$  is fluorine, comprising coupling 2-(2-nitro-imidazol-1-yl) acetic acid with a  $[^{18}F]$ -labeled perfluoroalkyl amine derivative.

**Claim 32 (currently amended)** A compound method according to claim 31, having wherein the compound has a specific radioactivity of the compound comprised between of 1 and to 30 Ci/mmol, preferably between 1 and 20 Ci/mmol, preferably between 1 and 10 Ci/mmol.

**Claim 33 (currently amended)** A compound method according to claim 31, having wherein the compound has the formula 2-(2-nitro-1H-imidazol-1-yl)-N-(3,3,3-trifluoropropyl) acetamide ( $[^{18}\text{F}]\text{-EF3}$ ).

**Claim 34 (currently amended)** A compound method according to claim 32, having wherein the compound has the formula 2(2-nitro-1H-imidazol-1-yl)-N-2,2,3,3,3-pentafluoropropyl) acetamide ( $[^{18}\text{F}]\text{-EF5}$ ).

**Claim 35 (cancel)**